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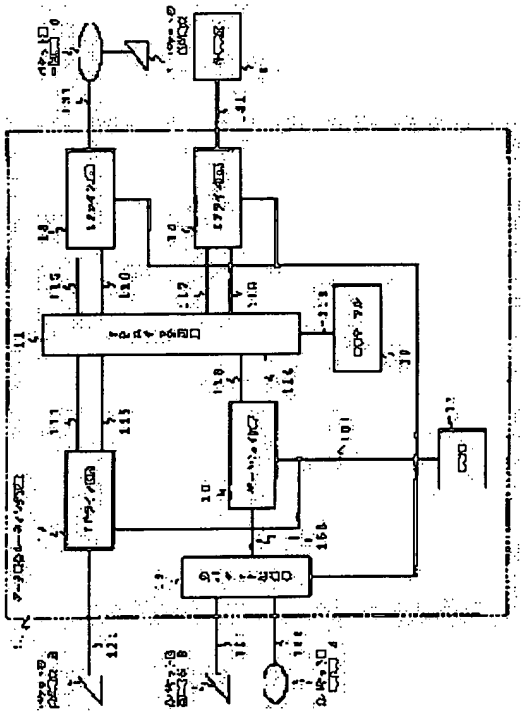
(54) VOICE/DATA INTEGRATED ROUTING DEVICE AND VOICE/DATA INTEGRATED ROUTING METHOD TO BE USED THEREFOR

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a voice/data integrated routing device capable of judging audio packet or deciding (priority control) transmission quality and capable of improving a speech quality.
SOLUTION: An IP switch circuit 11 judges a transfer destination by reading the IP address information of IP packets from respective IP line circuits 12-14. A retrieval table 16 stores the destination information or the like of IP packets inputted from the respective IP line circuits 12-14 or the like. A gateway circuit 18 has a function for connecting the IP switch circuit 11 and a non-packet processing part 15 and converting the IP packet to the audio data or the like of 64 Kpbs and a function for converting these audio data to the IP packet. The non-packet processing part 15 has a time dividing switch function and an interface terminating function such as a non-packet type audio terminal 3.



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* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the swap device [PBX (private branch exchange) etc.] which treats real-time data, such as voice, especially about the voice data integrated routing method used for voice data integrated routing equipment and it.
[0002]
[Description of the Prior Art] Conventionally, as this kind of a swap device, there is a voice data integrated exchange system indicated by JP,11-252249,A. In this voice data integrated exchange system, the MAC (Media Access Control) circuit and the LANSW (local area network swich) circuit are provided in a swap device.
[0003] The MAC circuit has the function to process the MAC frame from an audio terminal, and the LANSW circuit is switched according to the Media Access Control Address contained in the MAC frame.
[0004] According to the above-mentioned voice data integrated exchange system, it is not necessary to carry out introductory installation of a LAN switch and the swap device separately, or to prepare each different terminal transmission line. Moreover, since audio packet-ization is realized by hardware, there is little voice delay. Since there are especially transmission bands of enough in realizing voice data integrated exchange and an audio terminal within the enclosures of LAN, such as intranet, there is little voice delay. Furthermore, telephone and a data terminal can be held in one track.
[0005]
[Problem(s) to be Solved by the Invention] Recently, it argues about integrated technology, such as router equipment which carried out LAN, such as IP (Internet Protocol), to the swap device at the base by using voice as the base. Birth of the telephone which used IP as the base especially, and the equipment which maps voice in IP has influence.
[0006] It begins to argue about the voice quality on the Internet, and the point how to raise the voice quality on the Internet is becoming an important factor. Although a terminal side needs to be quality controlled, of course in order to raise the voice quality, that control of the swap device which constitutes a network is indispensable has made the important point clear.
[0007] For this reason, with a swap device, if the function to judge the layer of application level more is differentiated in order to carry out transfer control of the IP packet of a terminal, it will think. For example, with the technology given above-mentioned] in an official report, since it has switched based on a Media Access Control Address and cannot judge to application level, such as voice, when voice and the non-voice have been intermingled, the control delay and fluctuation by the non-voice occur, and there is unreasonableness in controlling voice on real time.
[0008] Moreover, it is necessary to transmit all of the voice of the subordinate linked to one MAC circuit, the frame signal for the multiple addresses from a data terminal, etc. to a LANSW circuit. For this reason, as capacity of a LANSW circuit, a very highly efficient thing is required. Furthermore, though external network equipment was unified, when the terminal increased, or in connecting with a wide area network, there is a problem that an external router is needed.
[0009] Then, it is in the purpose of this invention offering the voice data integrated routing method used for the voice data integrated routing equipment and it which can cancel the above-mentioned trouble, can perform judgment of a voice packet, the judgment (priority control) of the transmission quality, etc., and can raise a speech quality.
[0010]
[Means for Solving the Problem] The voice data integrated routing equipment by this invention The circuit termination circuit which carries out termination of a non-packetized voice terminal or the trunk line is held if needed. It is voice data integrated routing equipment which performs voice data integrated routing in the swap device possessing the switched circuit which exchanges these non-packet-ized data. Two or more IP line circuits which carry out termination of the IP (Internet Protocol) packet of a packetized voice terminal, and perform transceiver processing of the IP packet, The routing processing IP switch connect two or more aforementioned IP line circuits, and] circuit based on the address and identification information of the aforementioned IP packet, It has the gateway circuit which is located between the reference table circuit which performs reference of the aforementioned address or identification information, and the aforementioned IP switch circuit and the aforementioned switched circuit, and performs assembly of the aforementioned IP packet, and decomposition. It is made to perform the interconnection of the aforementioned non-packetized voice data and the aforementioned packetized voice data.
[0011] The voice data integrated routing method by this invention The circuit termination circuit which carries out termination of a non-packetized voice terminal or the trunk line is held if needed. It is the voice data integrated routing

method of performing voice data integrated routing in the swap device possessing the switched circuit which exchanges these non-packet-ized data. Two or more IP line circuits which carry out termination of the IP (Internet Protocol) packet of a packetized voice terminal, and perform transceiver processing of the IP packet are connected to an IP switch circuit. as if routing processing being carried out based on the address and identification information of the aforementioned IP packet in the aforementioned IP switch circuit By performing reference of the aforementioned address or identification information using a reference table circuit, and performing assembly of the aforementioned IP packet, and decomposition in the gateway circuit arranged between the aforementioned IP switch circuit and the aforementioned switched circuit It is made to perform the interconnection of the aforementioned non-packetized voice data and the aforementioned packetized voice data.

[0012] That is, the voice data integrated routing equipment of this invention is characterized by preparing an IP switch circuit, a reference table circuit, a gateway circuit, and IP line circuit in the interior of a swap device in the swap devices (PBX etc.) treating real-time data, such as voice.

[0013] More concretely, the voice data integrated routing equipment of this invention is building in a swap device, and it becomes possible to interlock and to control the existing switching function (non-packet processing section) and each above-mentioned circuit by the control section. In this case, the IP switch circuit is performing switching for the information more than IP layer and IP layer.

[0014] Therefore, by judging the identification information indicated by the high order layer of IP packet, and carrying out the message exchange, judgment of a voice packet, the judgment (priority control) of the transmission quality, etc. are attained, and it becomes possible to raise a speech quality.

[0015] Moreover, cooperation with the audio terminal and the application level of the existing telephone which use IP packet as the base is attained by connection with the non-packet processing section by the non-packet processing section being interlocked with.

[0016] Furthermore, the multiple address packet of ** and MAC level which was the switch of MAC level must be controlled by the Prior art, and traffic processing is high as a switch. However, in this invention, since the IP switch is adopted, it is controlling only required traffic.

[0017]

[Embodiments of the Invention] Next, one example of this invention is explained with reference to a drawing. Drawing 1 is the block diagram showing the composition of the voice data integrated routing equipment by one example of this invention. In drawing 1 , voice data integrated routing equipment 1 consists of the IP switch circuit 11, the IP line circuits 12-14, the non-packet processing section 15, a reference table 16, a control section 17, and a gateway circuit 18. In addition, voice data integrated routing equipment 1 uses IEEE802 standard for the layer composition of a packet as a prerequisite.

[0018] Although the IP line circuits 12-14 are functional completely the same, since equipment and the network of a connection place differ from each other, it has distinguished. The IP line circuit 12 holds a terminal, the IP line circuit 13 is connected to a wide area network, and the IP line circuit 14 is connected to backbone equipments, such as a router.

[0019] The IP switch circuit 11 is a switching circuit exchanged based on the IP address information on IP packet, reads the IP address information on IP packet from each IP line circuits 12-14 connected to the IP switch circuit 11, and judges the destination.

[0020] The reference table 16 is a circuit located between the IP switch circuit 11 and a control section 17, and the destination information on IP packet inputted from each IP line circuit 12 - 14 grades etc. is stored. Moreover, the destination information on IP packet is rewritable from a control section 17. The IP switch circuit 11 made the trigger IP packet of IP line circuit 12 grade, and has read the destination information on the reference table circuit 16 etc.

[0021] The gateway circuit 18 is a circuit which connects the IP switch circuit 11 and the non-packet processing section 15, and has the function to change especially IP packet into the voice data of 64Kpbs(es) etc., and the function to change the voice data into IP packet.

[0022] The non-packet processing section 15 has the function of the conventional existing swap device portion, and has the time-division-switch function based on 64 Kbpsxn (n= natural number), and the interface termination function of the non-packet type audio terminal 3 or the non-packet type trunk line 4, respectively.

[0023] A control section 17 is a function part which generalizes and controls voice data integrated routing equipment 1, and has the basic switching function of the non-packet processing section 15, the control function of the reference table 16, and the control function of each IP line circuit 12 - 14 grades especially.

[0024] The packet type audio terminal 2 has the function which forms voice into IP packet, and the function to change IP packet into voice. Moreover, the packet type audio terminal 7 also has the same function. The non-packet type audio terminal 3 shows a conventional analog telephone and a conventional multi-function telephone. The non-packet type trunk line 4 shows a conventional analog trunk line and a conventional digital trunk line. The packet type trunk line 6 shows the packet-ized data network. The external device 5 shows a router and other switching devices.

[0025] IP packet is transmitted to the transmission line 121,131,141, where capsuling is carried out. For example, Ether Capsuling is carried out by the NET frame or ATM (Asynchronous Transfer Mode).

[0026] With reference to this drawing 1 , operation of the voice data integrated routing equipment 1 by one example of this invention is explained. First, exchange operation with the IP line circuit 12 and the IP line circuit 13 is explained. In addition, exchange operation with the IP line circuit 13 and the IP line circuit 14 is the same as that of exchange operation with the IP line circuit 12 and the IP line circuit 13.

[0027] When the packet type audio terminal 2 connects with the packet type audio terminal 7 connected to IP line circuit 13 subordinate and the IP address of "10.10.10.2" and the packet type audio terminal 7 is temporarily set to "10.10.10.7" for the IP address of the packet type audio terminal 2, the packet type audio terminal 2 sets the transmission place address of IP packet to "10.10.10.7", sets the transmitting agency address as "10.10.10.2", will IP-packet-ize voice packet data, and will transmit.
[0028] IP packet which the packet type audio terminal 2 transmitted reaches the IP line circuit 12 through a transmission line 121. In the IP line circuit 12, IP packet transmitted from the packet type audio terminal 2 is restored, and IP packet from the restored packet type audio terminal 2 is sent to the IP switch circuit 11 through a transmission line 111.
[0029] The IP switch circuit 11 collates the IP address information on the transmission place of IP packet from the packet type audio terminal 2 "10.10.10.7" on the reference table 16. At this time, the various header information of the capsuling information on the transmission line 131 connected to the physical hold number of the IP line circuit 13 in which the packet type audio terminal 7 is held beforehand, or the IP line circuit 13 etc. is stored in the reference table 16.
[0030] As a result of this collating, the IP switch circuit 11 recognizes that the destination of IP packet from the packet type audio terminal 2 is the IP line circuit 13, and transmits IP packet from the packet type audio terminal 2 to the IP line circuit 13 through a transmission line 115. Moreover, the IP switch circuit 11 transmits the various header information read from the reference table 16 to the IP line circuit 13 through a transmission line 116.
[0031] In the IP line circuit 13, IP packet from the packet type audio terminal 2 is assembled to IP packet to the packet type audio terminal 7 based on various header information etc., and it transmits to a transmission line 131.
[0032] IP packet to the packet type audio terminal 7 is Ether although it changes with physical specifications of a transmission line 131. In the case of the NET frame, a Media Access Control Address etc. is added, and an ATM header etc. is added when it is ATM. This operation is well-known by IEEE802.3 or I.430.
[0033] Next, IP packet transfer of the case where it mentions above, and an opposite direction is explained. IP packet which the packet type audio terminal 7 transmitted reaches the IP line circuit 13 through a transmission line 131. In the IP line circuit 13, IP packet transmitted from the packet type audio terminal 7 is restored, and IP packet from the restored packet type audio terminal 7 is sent to the IP switch circuit 11 through a transmission line 115.
[0034] The IP switch circuit 11 collates the IP address information on the transmission place of IP packet transmitted from the packet type audio terminal 7 "10.10.10.2" on the reference table 16. At this time, the various header information of the capsuling information connected to the physical hold number of the IP line circuit 12 in which the packet type audio terminal 2 is held beforehand, or the IP line circuit 13 etc. is stored in the reference table 16.
[0035] As a result of the collating, the IP switch circuit 11 recognizes that the destination of IP packet from the packet type audio terminal 7 is the IP line circuit 12, and transmits IP packet from the packet type audio terminal 7 to the IP line circuit 12 through a transmission line 111. Moreover, the IP switch circuit 11 transmits the various header information read from the reference table 16 to the IP line circuit 12 through a transmission line 112.
[0036] In the IP line circuit 12, IP packet from the packet type audio terminal 7 is assembled to IP packet to the packet type audio terminal 2 based on various header information etc., and it transmits to a transmission line 121.
[0037] Then, exchange operation with the IP line circuit 12 and the non-packet processing section 15 is explained. In addition, exchange operation with the IP line circuit 13 and the non-packet processing section 15 is the same as that of exchange operation with the IP line circuit 12 and the non-packet processing section 15.
[0038] When the packet type audio terminal 2 connects with the non-packet type audio terminal 3 connected to non-packet processing section 15 subordinate and the IP address of the "10.10.10.2" non-packet type audio terminal 3 is temporarily set to "10.10.10.3" for the IP address of the packet type audio terminal 2, the packet type audio terminal 2 sets the transmission place address of IP packet to "10.10.10.3", sets the transmitting agency address as "10.10.10.2", will IP-packet-ize voice packet data, and will transmit.
[0039] IP packet which the packet type audio terminal 2 transmitted reaches the IP line circuit 12 through a transmission line 121. In the IP line circuit 12, IP packet transmitted from the packet type audio terminal 2 is restored, and IP packet from the restored packet type audio terminal 2 is sent to the IP switch circuit 11 through a transmission line 111.
[0040] The IP switch circuit 11 collates the IP address information on the transmission place of IP packet transmitted from the packet type audio terminal 2 "10.10.10.3" on the reference table 16. At this time, various decomposition information required of the non-packet processing section 15 connected to the physical hold number of the gateway circuit 18 in which the non-packet type audio terminal 3 is held beforehand, or the gateway circuit 18 etc. is stored in the reference table 16.
[0041] As a result of the collating, the IP switch circuit 11 recognizes that the destination of IP packet from the packet type audio terminal 2 is the gateway circuit 18, and transmits IP packet from the packet type audio terminal 2 to the gateway circuit 18 through a transmission line 113. Moreover, the IP switch circuit 11 transmits the various decomposition information read from the reference table 16 to the gateway circuit 18 through a transmission line 114.
[0042] In the gateway circuit 18, IP packet from the packet type audio terminal 2 is decomposed into the voice data to the non-packet type audio terminal 3 based on various decomposition information etc., and it transmits to a transmission line 153. Although the voice data to the non-packet type audio terminal 3 will be sent out to the non-packet type audio terminal 3 by operation of the non-packet processing section 15, exchange operation of the non-packet processing section 15 is the same as that of operation of the existing PBX, and the operation is well-known.
[0043] Next, a voice data transfer of the case where it mentions above, and an opposite direction is explained. The voice data

which the non-packet type audio terminal 3 transmitted reaches the non-packet processing section 15 through a transmission line 151. In the non-packet processing section 15, termination of the voice data transmitted from the non-packet type audio terminal 3 is carried out. At this time, the voice data from the non-packet type audio terminal 3 was gateway circuit 18 course beforehand, and it went packet type audio terminal 2, and came out, and the control section 17 has judged a certain thing by signaling control. For example, Q.931 grade is used for signaling control.

[0044] The gateway circuit 18 assembles the voice data from the non-packet type audio terminal 3 which received through the transmission line 153 to IP packet to the packet type audio terminal 2, and sends IP packet to the packet type audio terminal 2 to the IP switch circuit 11 through a transmission line 113. At this time, the transmission place of the IP address of IP packet to the packet type audio terminal 2 is "10.10.10.2", and a transmitting agency adds "10.10.10.80" which is the address of the gateway circuit 18.

[0045] In the IP switch circuit 11, the IP address information on the transmission place of IP packet to the packet type audio terminal 2 "10.10.10.2" is collated on the reference table 16. At this time, the various header information of the capsuling information on the transmission line 121 connected to the physical hold number of the IP line circuit 12 in which the packet type audio terminal 2 is held beforehand, or the IP line circuit 12 etc. is stored in the reference table 16.

[0046] As a result of the collating, the IP switch circuit 11 recognizes that the destination of IP packet to the packet type audio terminal 2 is the IP line circuit 12, and transmits IP packet to the packet type audio terminal 2 to the IP line circuit 12 through a transmission line 111. Moreover, the IP switch circuit 11 transmits the various header information read from the reference table 16 to the IP line circuit 12 through a transmission line 112. In the IP line circuit 12, IP packet to the packet type audio terminal 2 is assembled based on various header information etc., and it transmits to a transmission line 121.

[0047] Drawing 2 is the block diagram showing the composition of the IP switch circuit 11 of drawing 1 . In drawing 2 , the IP switch circuit 11 consists of interface circuitries 11a-11d for connecting with the IP line circuit 12 or the gateway circuit 18, switching circuit 11e, and 11f of reference interface circuitries. Interface circuitries 11a-11d have the same function respectively.

[0048] Interface-circuitry 11a transmits the IP address information on IP packet, and the information more than IP layer (it considers as three or more-layer header information hereafter) to 11f of reference interface circuitries through a transmission line 202, when IP packet is received from a transmission line 111.

[0049] Interface-circuitry 11b transmits three or more-layer header information to 11f of reference interface circuitries through a transmission line 204. Interface-circuitry 11c transmits three or more-layer header information to reference interface-circuitry 11c through transmission 206. 11d of interface circuitries transmits three or more-layer header information to 11f of reference interface circuitries through a transmission line 208.

[0050] 11f of reference interface circuitries concentrates three or more layers [from each interface circuitries 11a-11d] header information, and they have the function sent out to the reference table 16. The reference table 16 is used just like memory, and 11f of reference interface circuitries will send out the address information of memory. Consequently, the reference table 16 sends out various header information and various decomposition information for destination information to each interface circuitries 11a-11d as a reference result.

[0051] The various header information and the various decomposition information on interface-circuitry 11a are transmitted through a transmission line 201. The various header information and the various decomposition information on interface-circuitry 11b are transmitted through a transmission line 203. The various header information and the various decomposition information on interface-circuitry 11c are transmitted through a transmission line 205. 11d [of interface circuitries] various header information and various decomposition information are transmitted through a transmission line 207.

[0052] In interface-circuitry 11a, when various header information and various decomposition information are received, IP packet is transmitted to a transmission line 211 based on the information. In interface-circuitry 11b, when various header information and various decomposition information are received, IP packet is transmitted to a transmission line 212 based on the information. In interface-circuitry 11c, when various header information and various decomposition information are received, IP packet is transmitted to a transmission line 213 based on the information. In 11d of interface circuitries, when various header information and various decomposition information are received, IP packet is transmitted to a transmission line 214 based on the information.

[0053] Switching circuit 11e routing-transmits to each interface circuitries 11a-1d based on the destination information in various] header information. Since it is well-known about the composition of switching circuit 11e, the explanation is omitted.

[0054] Drawing 3 is the block diagram showing the composition of the IP line circuit 12 of drawing 1 . In drawing 3 , the IP line circuit 12 consists of 12d of INF circuits which have the interface function of CPU(central processing unit)12c which performs packet control of layer 2 termination-circuit 12a which carries out termination of the two or less layer, IP filtering circuit 12b which discriminates IP packet, and layer 2 termination circuit 12a and IP filtering circuit 12b, and a control section 17.

[0055] First, operation of the IP line circuit 12 at the time of receiving various packets from a transmission line 121 is explained. Layer 2 termination-circuit 12a carries out termination of the two or less layer of the various frames of a transmission line 121, and has the function which takes out IP packet. This taken-out IP packet is transmitted to IP filtering circuit 12b through a transmission line 301. IP filtering circuit 12b has the function to transmit IP packet to the IP switch

circuit 11 through a transmission line 111.
[0056] Two or less layer [by which termination was carried out by layer 2 termination-circuit 12a] information is transmitted to CPU12c through a transmission line 302. In CPU12c, two or less-layer information is transmitted to a control section 17 through 12d of INF circuits. Two or less-layer information is processed by the control section 17, and what is set as the reference table 16, and the thing managed as maintenance information exist.
[0057] Next, operation at the time of receiving IP packet from a transmission line 111 is explained. IP filtering circuit 12b recognizes whether it is IP packet of ****** for the information on a transmission line 112, when IP packet is received from a transmission line 111.
[0058] For example, suppose that the identification information "20" was assigned to the IP line circuit 12. This identification information is contained various header information and in [various] decomposition information. To timing simultaneous with IP packet, IP packet can go to a transmission line 112 by transmitting identification information IP line circuit 12, and can appear in it by it, and the IP switch circuit 11 can make a certain thing recognize.
[0059] In IP filtering circuit 12b, when identification information is in agreement, IP packet is incorporated and it transmits to layer 2 termination-circuit 12a through a transmission line 301. In layer 2 termination circuit 12a, it has the function which receives two or less-layer various header information and various decomposition information from a transmission line 112, and the function which assembles the packet to a transmission line 121. In addition, since the composition of the IP line circuit 13 and the IP line circuit 14 and operation are the same as that of the composition of the above-mentioned IP line circuit 12, and operation, it omits about those explanation.
[0060] Drawing 4 is the block diagram showing the composition of the gateway circuit 18 of drawing 1 . In drawing 4 , the gateway circuit 18 consists of assembly circuit 18a, decomposition circuit 18b, IP circuit 18c, CPU18d, and INF circuit 18e.
[0061] CPU18d has the control function to IP circuit 18c, assembly circuit 18a, and decomposition circuit 18b. INF circuit 18e has the interface function with a control section 17.
[0062] First, operation at the time of receiving voice data from a transmission line 153 is explained. Assembly circuit 18a carries out termination of the voice data of a transmission line 153, and has the function which assembles the voice packet of dozens of byte unit. The assembled voice packet is transmitted to IP circuit 18c through a transmission line 401. IP circuit 18c has the control function which assembles a voice data packet to IP packet, and assembled IP packet is transmitted to the IP switch circuit 11 through a transmission line 113. Three or more layers [of this IP packet] information does not use what was set up through CPU18d, and the database which is not illustrated is held at the control-section 17 side.
[0063] Next, operation at the time of receiving IP packet from a transmission line 113 is explained. IP circuit 18c recognizes whether it is IP packet of ****** for the information on a transmission line 114, when IP packet is received from a transmission line 113.
[0064] For example, suppose that the identification information "80" was assigned in the gateway circuit 18. This identification information is contained various header information and in [various] decomposition information. To timing simultaneous with IP packet, IP packet can go to a transmission line 114 by transmitting identification information gateway circuit 18, and can appear in it by it, and the IP switch circuit 11 can make a certain thing recognize. In the gateway circuit 18, when identification information is in agreement, IP packet is incorporated and it transmits to decomposition circuit 18b through a transmission line 401. In decomposition circuit 18b, it has the function which receives the various header information and the various decomposition information by the side of the non-packet processing section 15 from a transmission line 114, and the function to transmit voice data to a transmission line 153.
[0065] Drawing 5 is drawing showing the example of composition of the reference table 16 of drawing 1 . In drawing 5 , the reference table 16 consists of high-speed memory circuits, and a data area exists to address information. As for a part for the address part of a reference table, three or more layers [, such as an IP address from 11f of reference interface circuitries,] information is equivalent to it.
[0066] Moreover, the transmission-line side header information the amount of [of the reference table 16] data division indicate the Media Access Control Address information on an output place, three or more-layer address information, the identification information that shows the IP line circuits 12-14, and the various header information of a transmission line to be, and the time-slot information used in the gateway circuit 18 are equivalent to it.
[0067] The data area of the reference table 16 is rewritable with a control section 17. Therefore, a control section 17 changes the information on this reference table 16 immediately, when an addition and deletion newly occur. For example, when the hold position was changed at the IP line circuits 12-14, or when a terminal moves, it is equivalent to it.
[0068] The control section 17 has the termination function of signaling of various terminals, the resource function manager of the non-packet processing section 15, the information change function of the reference table 16, and the maintenance control function. It is raised that the centralized control is carried out as a feature of a control section 17.
[0069] Thus, by judging the identification information indicated by the high order layer of IP packet, and carrying out the message exchange, judgment of a voice packet, the judgment (priority control) of the transmission quality, etc. can be performed, and a speech quality can be improved.
[0070] Moreover, it can cooperate the application level of the audio terminal and the existing telephone which use IP packet as the base as well as the connection with the non-packet processing section by interlocking packet processing with the non-packet processing section.
[0071] Furthermore, what is necessary is to control only required traffic by this invention, since the IP switch is adopted,

although the multiple address packet of ** and MAC level which was the switch of MAC level must be controlled by the Prior art and traffic processing is high as a switch.

[0072]

[Effect of the Invention] [in the swap device possessing the switched circuit which holds the circuit termination circuit which carries out termination of a non-packetized voice terminal or the trunk line according to this invention if needed as explained above, and exchanges these non-packet-ized data] Two or more IP line circuits which carry out termination of the IP packet of a packetized voice terminal, and perform transceiver processing of the IP packet are connected to an IP switch circuit. as if routing processing being carried out based on the address and identification information of IP packet in an IP switch circuit By performing reference of the aforementioned address or identification information using a reference table circuit, and performing assembly of IP packet, and decomposition in the gateway circuit arranged between the IP switch circuit and the switched circuit By performing the interconnection of non-packetized voice data and packetized voice data, judgment of a voice packet, the judgment (priority control) of the transmission quality, etc. can be performed, and it is effective in the ability to raise a speech quality.

[Translation done.]

* NOTICES *

CLAIMS

[Claim(s)]

[Claim 1] Voice data integrated routing equipment which is equipped with the following and characterized by performing the interconnection of the aforementioned non-packetized voice data and the aforementioned packetized voice data. Two or more IP line circuits which hold the circuit termination circuit which carries out termination of a non-packetized voice terminal or the trunk line if needed, are voice data integrated routing equipment which performs voice data integrated routing in the swap device possessing the switched circuit which exchanges these non-packet-ized data, and carry out termination of the IP (Internet Protocol) packet of a packetized voice terminal, and perform transceiver processing of the IP packet. The routing processing IP switch [connect two or more aforementioned IP line circuits, and] circuit based on the address and identification information of the aforementioned IP packet. The reference table circuit which performs reference of the aforementioned address or identification information. The gateway circuit which is located between the aforementioned IP switch circuit and the aforementioned switched circuit, and performs assembly of the aforementioned IP packet, and decomposition.

[Claim 2] The information on the aforementioned reference table circuit is voice data integrated routing equipment according to claim 1 characterized by centralized control being carried out by the control section which exchanges the aforementioned non-packet-ized data.

[Claim 3] Voice data integrated routing equipment according to claim 1 or 2 which carries out the feature of having made it carry the aforementioned IP switch circuit, the aforementioned reference table circuit, and the aforementioned gateway circuit if needed.

[Claim 4] The circuit termination circuit which carries out termination of a non-packetized voice terminal or the trunk line is held if needed. It is the voice data integrated routing method of performing voice data integrated routing in the swap device possessing the switched circuit which exchanges these non-packet-ized data. Two or more IP line circuits which carry out termination of the IP (Internet Protocol) packet of a packetized voice terminal, and perform transceiver processing of the IP packet are connected to an IP switch circuit. as if routing processing being carried out based on the address and identification information of the aforementioned IP packet in the aforementioned IP switch circuit By performing reference of the aforementioned address or identification information using a reference table circuit, and performing assembly of the aforementioned IP packet, and decomposition in the gateway circuit arranged between the aforementioned IP switch circuit and the aforementioned switched circuit The voice data integrated routing method characterized by performing the interconnection of the aforementioned non-packetized voice data and the aforementioned packetized voice data.

[Claim 5] The information on the aforementioned reference table circuit is the voice data integrated routing method according to claim 4 characterized by centralized control being carried out by the control section which exchanges the aforementioned non-packet-ized data.

[Claim 6] The voice data integrated routing method according to claim 4 or 5 which carries out the feature of having made it carry the aforementioned IP switch circuit, the aforementioned reference table circuit, and the aforementioned gateway circuit if needed.

[Translation done.]